What is claimed is:

1. A method of identifying cells expressing a preselected molecule comprising the steps of:

providing a plurality of cells at least some of which express the preselected molecule;

providing a plurality of silica-coated nanoparticles coated with a functional group that binds to the preselected molecule, each of said nanoparticles comprising a core and a silica shell;

mixing the plurality of silica-coated nanoparticles with the plurality of cells to form a mixture;

placing the mixture under conditions that allow the nanoparticles to bind to cells expressing the preselected molecule; and

analyzing the cells for bound nanoparticles.

2. The method of claim 1, wherein silica-coated nanoparticles are fluorescent.

3. The method of claim 1, wherein the plurality of nanoparticles have a mean size of less than 1 micron.

4. The method of claim 1, wherein the nanoparticles have a mean size between 1 nm and 300 nm.

5. The method of claim 1, wherein the nanoparticles have a mean size between 2 nm and 10 nm.

6. The method of claim 1, wherein the core is magnetic.

7. The method of claim 6, wherein the core comprises a metal selected from the group consisting of magnetite, maghemite, and greigite.

8. The method of claim 1, wherein the core comprises a pigment.

9. The method of claim 8, wherein the pigment is an inorganic salt selected from the group consisting of: potassium permanganate, potassium dichromate, nickel sulfate, cobalt-chloride, iron(III) chloride, and copper nitrate.

10. The method of claim 1, wherein the core comprises a dye selected from the group consisting of Ru/Bpy and Eu/Bpy.

11. The method of claim 1, wherein the core comprises a metal selected from the group consisting of Ag and Cd.

12. The method of claim 1, wherein the functional group is a protein.

13. The method of claim 12, wherein the functional group is an antibody that specifically binds to the preselected molecule.

14. The method of claim 13, wherein the core comprises a metal selected from the group consisting of magnetite, maghemite, and greigite.

15. The method of claim 1, wherein the functional group is a nucleic acid.

16. The method of claim 1, wherein the functional group is a substance selected from the group consisting of biotin and streptavidin.

17. The method of claim 1, wherein the silica shell comprises a reactive silicate selected from the group consisting of TEOS and APTS.